UNITED STATES DEPARTMENT OF AGRICULTURE
U.S. FOOD DISTRIBUTION ADMINISTRATION
Great Lakes Region
5 South Wabash Avenue
Chicago, Illinois

DRIED WHOLE EGGS IN SCHOOL LUNCH PROGRAMS*

Compiled by Regional Nutrition Advisor
Great Lakes Region

Dried eggs for the soldier's mess kit! Dried eggs for the allied nations! And now dried eggs for school lunches! As transportation and storage facilities become more limited, we are realizing the value of dehydrated foods and the advantages they offer in furthering our nation's war effort.

Physical Qualities and Food Value

Dried, or powdered, whole egg, long known to the baking industry, is an unfamiliar product to most school lunch managers. Whole egg powder may vary in color from light yellow to yellowish orange. Dried eggs become extremely useful when fresh, cold storage, or frozen eggs are not available. They have practically the same food value as fresh eggs. And eggs are next to milk in the diet as sources of good protein, iron, vitamin A, and riboflavin.

Packaging and Storing

The dried whole eggs allocated for use in the school lunch program will be packed for the most part in 14-pound pasteboard boxes, lined with moisture-proof paper. Some shipments may be made in lined barrels of 150-pound capacity.

Where re-packaging is necessary to meet requirements of small schools, it is important that glassine-lined, laminated bags of suitable size be used as such bags are air, moisture, light, and grease-proof.

Dried eggs must be kept in a tightly-covered container, in a cool, dry place, away from foods from which odors and flavors may be absorbed, if they are to retain their high quality.

To prevent deterioration, egg powder should be held at a temperature ranging from 50° to 70° F. Under no circumstances should the storage temperature go higher than 85° F. A refrigerator that maintains a temperature of 50° F. or less is ideal for long storage, especially after the container has been opened. It is important to return the container of the egg powder to a suitable storage place soon after removing the quantity of the powder needed in the preparation of a meal; letting it stand in a warm kitchen as food preparation continues gives the contents a chance to absorb moisture and become warm. After opening the container and removing some of the egg powder, the lining should be folded down carefully and the lid of the container adjusted closely to exclude as much air as possible.

*Information from the U. S. Bureau of Home Economics

Dried whole eggs, because of their low moisture content, absorb moisture rapidly if stored in a damp place. The absorption of moisture causes the powder to become lumpy and makes it difficult to reconstitute, increases the chances of spoilage, and allows for changes in flavor.

Egg powder, like milk and cream, absorbs odors and flavors easily, especially if not kept in tightly-closed containers. It should not be stored near foods having strong odors or flavors, or in a musty storage room.

Reconstituting Dried Whole Eggs

Egg powder is reconstituted by adding water to replace that which was removed in the drying process. To reconstitute dried egg, use equal measures of egg and either cold or slightly warm water. Measure the powder into a mixing bowl, add a small amount of the water, and mix until smooth with a spoon. Continue adding the water while stirring; as lumps form, work them out with a spoon against the side of the bowl. The reconstituted mixture is perishable, and should either be used at once or kept in a cold place.

Approximate Equivalents of Fresh and Dried Whole Egg

The number of shell eggs represented by a pound of the egg powder varies with the size of the fresh eggs. As a rough guide, a pound of dried whole eggs may be considered to represent the content of about 3 dozen medium-sized eggs (shell eggs weighing 24 ounces to the dozen). On this basis, a 14-pound box contains the equivalent of about 500 fresh eggs.

The table below shows approximate equivalents of fresh and dried whole eggs in terms of measure, with proportions of water to use in reconstituting the egg powder.

Fresh Eggs	Dried Whole Egg (level measure)	Water
1	2 tablespoons	2 tablespoons
2	1/4 cup	1/4 cup
3	6 tablespoons	6 tablespoons
4	1/2 cup	1/2 cup
5	10 tablespoons	10 tablespoons
6	3/4 cup	3/4 cup
8	1 cup	1 cup
10	1-1/4 cup	1-1/4 cup
12	1-1/2 cup	1-1/2 cup

Using Reconstituted Whole Egg Powder

Studies made in the Bureau of Home Economics and other laboratories indicate that the best results in the use of whole egg powder are obtained if it is reconstituted as directed above before adding it to other ingredients in a recipe. This was found true even in making cake, muffins, cornbread, and griddle cakes, although directions are sometimes given for sifting the egg powder with the dry ingredients in recipes for such products. It is, of course, always necessary to reconstitute the egg powder in making scrambled eggs, omelet, custard, and salad dressing.

School lunch managers and cooks will find this product a valuable addition to the list of AMA commodities, using it from day to day in cookies, cake, quick breads, custards, puddings, and salad dressing. They will also be pleasantly surprised to find that high-quality scrambled eggs can be prepared from the egg powder. For variety, the scrambled eggs can be used as a sandwich filling.

Special recipes for the use of dried whole eggs are not necessary; the reconstituted whole egg powder is simply used in place of fresh eggs in suitable recipes that have been tested and found satisfactory.

Scrambled Egg
(Using equivalent 5 eggs)

1 cup reconstituted egg
(10 T. dried egg, 10 T. water)
1/4 cup milk or tomato juice
Salt and pepper
1 tablespoon butter

Beat the egg. Add the milk or temato juice, and season with salt and pepper. Melt the butter in a frying pan and pour the mixture into the pan. Stir and cook over low heat until thickened. Serve at once on a hot platter.

Omelet
(Using equivalent 5 eggs)

1 cup reconstituted egg
(10 T. dried egg, 10 T. water)
1/4 cup milk
Salt
1 tablespoon butter

Beat the egg. Add the milk and salt. Melt the butter in a large frying pan. Pour the mixture in a thin layer on the bottom of the pan, cook slowly until firm; then roll the omelet in the pan, and turn onto a hot platter.

Variations: Chopped fried ham or bacon, grated cheese, or cooked vegetable, chopped onion and parsley, or jelly may be added to the egg mixture before it is cooked or may be spread over the cooked omelet before it is rolled and turned onto the platter.

Muffins
(Using equivalent 1 egg)

1/4 cup reconstituted egg (2 T. dried egg, 2 T. water)
2 cups sifted flour
3 teaspoons baking powder
1/2 teaspoon salt
2 tablespoons sugar
1 cup milk
2 to 4 tablespoons fat, melted

Sift the dry ingredients together. Beat the egg, and combine with the melted fat. Add to the dry ingredients all at once, stir just enough to moisten all the ingredients and to give the mixture a rough appearance. Fill greased muffin pans two-thirds full. Bake in a hot oven (400° F.) for about 20 minutes.

Corn Bread
(Using equivalent 2 eggs)

1/2 cup reconstituted egg (4 T. dried egg, 4 T. water)
2 cups finely ground corn meal
1/2 teaspoon soda
2 teaspoons baking powder
2 teaspoons salt
2 cups sour milk
2 tablespoons fat, melted

Sift the dry ingredients and add the milk. Beat the egg, and add with the fat to the other ingredients. Pour into a very hot greased pan. Bake from 40 to 50 minutes in a hot oven (400° to 425° F.).

Plain Cake
(Using equivalent 1 egg)

1/4 cup reconstituted egg (2 T. dried egg, 2 T. water)
3 cups sifted soft wheat flour
4 teaspoons baking powder
1/4 to 1/2 teaspoon salt
1 cup sugar
1 cup milk
1/4 cup fat, melted
1/2 to 1 teaspoon flavoring

Sift the dry ingredients together. Beat the egg, and combine with the milk, melted fat, and flavoring. Add to the dry ingredients all at once, stir until the mixture is smooth. Pour into a lightly greased, shallow pan and bake in a moderate oven (350° F.) for 25 minutes. As cup cakes, bake in a moderately hot oven (375° F.) for about 20 minutes.

Soft or Baked Custard
(Using equivalent 5 eggs)

1 cup reconstituted egg (10 T. dried egg, 10 T. water)
1 quart milk
6 to 8 tablespoons sugar
1/8 teaspoon salt
1/2 teaspoon vanilla
Nutmeg
Butter

Heat the milk, beat the egg, add the sugar and salt, and add the hot milk gradually while stirring.

For soft custard, include the nutmeg if desired but omit the butter. Cook the mixture over hot (not boiling) water in a double boiler. Stir constantly until the custard coats the spoon. Chill and add the vanilla.